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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/881,981	06/14/2001	Zhizhang Chen	10015150-1	7792

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HEWLETT-PACKARD COMPANY
Intellectual Property Administration
P.O. Box 272400
Fort Collins, CO 80527-2400

EXAMINER

BERCK, KENNETH A

ART UNIT PAPER NUMBER

2879

DATE MAILED: 10/23/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/881,981

Applicant(s)

CHEN ET AL.

Examiner

Ken A Berck

Art Unit

2879

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-6, 8-16, 18-23, 25 and 26 is/are rejected.
- 7) ☒ Claim(s) 7, 17 and 24 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 June 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-5, 8-15, 18-22 and 25-26 are rejected under 35 U.S.C. 102(b) as being anticipated by Horne et al. (US 5413513).

Regarding claim 1, Horne discloses (column 3, line 55-column 4, line 43) disclose a method for creating an electron lens by applying a polymer layer (8) on an emitter surface and curing the polymer layer to reduce volatile content.

Regarding claim 2, Horne discloses (column 3, line 55-column 4, line 43) applying a first conductive layer (9) on the polymer layer, applying a photoresist layer (10) on the first conductive layer, patterning the photoresist layer to define an electron lens and etching the first conductive layer to create an opening.

Regarding claim 3, Horne discloses (column 4, lines 5-37) patterning the photoresist layer includes the step of patterning the photoresist layer to define a shield layer.

Regarding claim 4, Horne discloses (figs 11-12) the step of etching the polymer layer within the opening with a selective etch such that the ratio of etching of the polymer layer to the emitter surface is greater than 1000:1.

Regarding claim 5, Horne discloses (column 4, lines 5-37) the photoresist layer is not removed before the step of etching the polymer layer.

Regarding claim 8, Horne discloses the step of applying a first conductive layer (9, gold) further comprises the step of applying a conductive layer with a similar temperature expansion to the cured polymer layer (8, polyamide ester).

Regarding claim 9, Horne discloses (column 5, lines 1-35) applying a first conductive layer further comprising the step of applying a malleable conductor.

Regarding claim 10, Horne discloses an electron lens created by the process of claim 1.

Regarding claim 11, Horne discloses a focused electron emitter created using the process of claim 1.

Regarding claim 12, Horne discloses (column 3, line 55-column 4, line 43) disclose a method for creating an electron lens by applying a polymer layer (8) on an emitter surface and curing the polymer layer to reduce volatile content, applying a first conductive layer (9) on the polymer layer, applying a photoresist layer (10) on the first conductive layer, patterning the photoresist layer to define an electron lens and etching the first conductive layer to create an opening.

Regarding claim 13, Horne discloses (column 4, lines 5-37) patterning the photoresist layer includes the step of patterning the photoresist layer to define a shield layer.

Regarding claim 14, Horne discloses (figs 11-12) the step of etching the polymer layer within the opening with a selective etch such that the ratio of etching of the polymer layer to the emitter surface is greater than 1000:1.

Regarding claim 15, Horne discloses (column 4, lines 5-37) the photoresist layer is not removed before the step of etching the polymer layer.

Regarding claim 18, Horne discloses an electron lens created by the process of claim 12.

Regarding claim 19, Horne discloses a focused electron emitter created using the process of claim 12.

Regarding claim 20, Horne discloses (column 3, line 55-column 4, line 43) disclose a method for creating an electron lens by applying a polymer layer (8) on an emitter surface and curing the polymer layer to reduce volatile content, applying a first conductive layer (9) on the polymer layer, applying a photoresist layer (10) on the first conductive layer, patterning the photoresist layer to define an electron lens and etching the first conductive layer to create an opening and etching the polymer layer within the opening with a selective etch such that the ratio of etching of the polymer layer to the emitter surface is greater than 1000:1.

Regarding claim 21, Horne discloses (column 4, lines 5-37) patterning the photoresist layer includes the step of patterning the photoresist layer to define a shield layer.

Regarding claim 22, Horne discloses (column 4, lines 5-37) the photoresist layer is not removed before the step of etching the polymer layer.

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Regarding claim 25, Horne discloses an electron lens created by the process of claim 20.

Regarding claim 26, Horne discloses a focused electron emitter created using the process of claim 20.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 6, 16 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Horne et al. (US 5413513) in view of Bernhardt et al. (US 5658832).

Horne discloses all of the above claim limitations but fails to clearly point out balancing the conditions between etch rate, etch residue, etch profile, and minimum DC bias.

Bernhardt discloses (column 3, lines 1-36) the etch process conditions are set to balance the conditions between etch rate, etch residue, etch profile, and minimum DC bias in order to produce the desired anisotropy.

Hence it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the method of Horne with the etch process conditions are set to balance the conditions between etch rate, etch residue, etch profile, and minimum DC bias in order to produce the desired anisotropy, as taught by Bernhardt.

Allowable Subject Matter

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Claims 7,17 and 24 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

The prior art of record neither shows nor suggests the polymer etch profile having an undercut of about 1 micron to about 2 microns per about 6.5 microns of etch depth, in combination with other claim limitations.

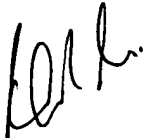
Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ken A Berck whose telephone number is (703)305-7984. The examiner can normally be reached on Mon-Fri 8:30-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh Patel can be reached on (703)305-4794. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0956.


kab


NIMESHKUMAR D. PATEL
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800